

Some Rare Indian Aphids

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INTRODUCTION

Several species of aphids have recently been added to the collections of this Institute, some of which have not been previously reviewed by the writer. Of these two are new to India, four though previously noted require revision, and two had sexual forms in new localities under conditions different from those observed before. Since very little information is available on these aphids in India, the observations made along with their present systematic position and economic status are discussed in this paper. For certain other species, food plants not noted before are added. Apart from the species collected by the writer in South India, specimens were received from Dr. V. Prabhakara Rao of the Commonwealth Institute of Biological Control, Bangalore Station, collected in that area, and from Sri. R. N. Azad, Plant Virus Research Laboratory, Simla, collected in the western Himalayas. The identifications have been verified through the kind courtesy of Dr. D. Hille Ris Lambers, Netherlands.

1. *Aulacorthum solani* (Kaltenbach)

Aphis solani Kaltenbach, 1843, Mono. d. Pflanzenlause.

Siphonophora convolvuli Buckton, 1876, Mono. Br. Aphides.

Myzus pseudosolani Theobald, 1922, *S.E. Agric. Coll. Bull.* 1.

Aulacorthum solani (Kalt.) Hille Ris Lambers, 1948, *Temminckia* VIII.

Morphological features. The nymphs and adult apterous females are whitish to pale green with a darker green or brownish patch near the siphunculi. The head is scabrous with a straight vertex and large antennal tubercles with parallel inner sides. The antennae are longer than the body with 1 or 2 rhinaria near the base of the III antennal segment. The processus terminalis is 4 or 5 times the base of the VI segment. The body hairs are short and slightly swollen at the tip. The abdomen has dark intersegmental markings in pairs on each segment. The siphunculi are pale and cylindrical except for the apex which is brown. The cauda is conical with about 8 hairs. The alate female is darker with pale sclerotic bands on the sides. The III antennal segment has about 14 circular rhinaria.

Host plants and distribution. This aphid occurred in Ootacamund in the Nilgiris district in south India (elevation 7,200 ft. above m.s.l.). It was found on *Digitalis purpurea* on the lower surface of leaves in bushy portions of the plant. It was noted in January and February.

In Europe and America it is said to be polyphagous feeding on a wide range of hosts. Jacob (1944) observed overwintering of apterous viviparous females in Britain. The single apterous females containing embryos resting without reproducing nymphs on the same host in Ootacamund along with the shrunken integument lead one to believe that similar conditions may be prevalent in this locality also.

According to Hille Ris Lambers (1949) the aphid is distributed in Europe, North America, and New Zealand. Essig (1947) gives China, Japan, Africa, and Hawaii also. This is the first time it is being noted in India. It has evidently been introduced into this country along with some commercial products in recent years.

Economic importance. In Europe and America this aphid, commonly called the Foxglove Aphid, is of considerable importance as a vector of several virus diseases of potato. In south India it has not yet been noted on potato and its injury to *Digitalis* is rather slight.

2. *Liosomaphis berberidis* (Kaltenbach)

Aphis berberidis Kaltenbach, 1843, Mono. d. Pflanzenlause.

Morphological features. The apterous viviparous female has short, pale antennae with the processus terminalis just longer than the base. The head, thorax, and abdomen are pigmented with dark sclerotic bands across each segment. The markings on the abdominal segments 3 to 5 coalesce to form a central broad patch. The siphunculi are pale, smooth, narrow at the base to about the third and swollen afterwards, the swollen portion being about double of the narrow portion in width. Two or three transverse striae are seen below the expanded flange. Cauda is pale, about half of the siphunculi, with a conical apex and 5 hairs.

Host plant and distribution. This aphid was noted at Simla in the western Himalayas (coll. R.N. Azad) during September. So far it was known only in Europe, and the present record has to be regarded as the first from outside the Palaearctic Region. The aphid has possibly been introduced into this country recently and, since the climatic conditions in Simla are similar to those in temperate regions, the aphid would appear to have survived there.

Economic importance. The aphid is not of any importance as it attacks only a hardy perennial which is not cultivated.

3. *Forda hirsuta* Mordvilko

Forda hirsuta Mordvilko, 1928, Bestimer der Insekten.

Forda orientalis George, 1928, J. & Proc. Asiat. Soc. 20.

Morphological features. The apterous viviparous female has a lightly pigmented head with many short and spiny hairs and small warts all over. Antennae are pale brown all through with many hairs which are as long as those on the body; the I segment has 8, the II 13, III 23, IV 11, and V 16+4. The hairs on the tergites in the thoracic and abdominal regions are distributed in large groups on the margins. The 8th tergite has 16 hairs. The cauda is rounded with about 20 short and stout hairs. The rostrum reaches the 3rd coxa with the last segment elongate and as long as the 2nd joint of the hind tarsus; it has an acute apex and has 12 short hairs apart from the apical ones. The tarsal formula is 7 hairs each with 2 empodial hairs.

Measurements of apterous female, in mm.

Length of body	Antennae	Antennal segments					Last segment of rostrum	2nd tarsus of hind leg
		I	II	III	IV	V		
2.46	.85	.11	.12	.28	.14	.15 + .05	.22	.22

Host plants and distribution. The aphids were found feeding on the roots of *Pennisetum typhoides* in Coimbatore during October. George (1928) recorded it on *Sorghum vulgare* (= *Andropogon sorghum*) in Coimbatore. Apart from south India it has been noted only in central Asia, Iran, and Turkey.

This aphid is very similar in appearance to the common grass-root aphid of Coimbatore, namely *Tetraneura hirsuta* (Baker), but the pale yellow colour of the living form, the absence of siphunculi, and the absence of long hairs on the margins make it easily recognisable.

Dr. D. Hille Ris Lambers points out that the south Indian form is identical with the central Asian form, and therefore it is here treated as a synonym.

4. *Tetraneura javensis* van der Goot

Tetraneura javensis v.d. Goot, 1917, Contr. a la Fauna des Indes Neerland.

T. cynodonti subsp. *coimbatorensis* George, 1928, J. & Proc. Asiat. Soc. 20.

Morphological features. The apterous viviparous female has a sclerotic brown head with long hairs which are about twice the basal breadth of the III antennal segment. The antennae

are short and dark brown with many hairs which are only about half of those on the vertex. The abdominal segments have long marginal hairs in groups of 3 or 4 on each segment. The tergum is clear except for intersegmental, pleural, brown spots on the anterior segments and complete bars on the 7th and 8th tergites. Wax plates are found on the margins in between spiracles and are composed of a large cell surrounded by 10 to 20 small ones with thick walls. Another row is found spinally which has only 2 or 3 small glands surrounding the central one. The siphunculi are brown and conical with a constriction below the large flange. The cauda is rounded with about 10 hairs and the anal plate also rounded with 12 hairs. The rostrum is short, reaching just past the 2nd coxa with the apical segment elongate having a pointed tip and 4 hairs apart from the apical ones. The legs are brown with thin hairs.

Host plants and distribution. This aphid occurred on sugarcane in Perianaikenpalayam near Coimbatore (coll. K. R. Nagarajan) in January and February. The infested plants were turning yellow (Nagarajan, 1957) and getting stunted in growth. *Solenopsis geminata* was attending on it, but did not produce the characteristic ant holes near the plants.

The previous record of this aphid in India was by George (1928) in Coimbatore on sugarcane. It has been noted also in Java on the same plant. It can be easily distinguished by the whitish colour of the body and the darker colour of the legs and antennae of the living forms.

The suggestion of Dr. D. Hille Ris Lambers that the south Indian and the Javanese forms may be the same has been accepted here and the former treated as a synonym.

5. *Rhopalosiphum rufiabdominalis* (Sasaki)

Toxoptera rufiabdominalis Sasaki, 1899, Hok. Agr. Expt. Sta. Rt. 17.

Rhopalosiphum avenae F. George, 1928, *J. & Proc. Asiat. Soc.* 20.

The rice-root aphid had been confused with other cereal aphids, till Doncaster (1956) drew attention to the distinguishing features especially the rusty coloration around the siphunculi in the living forms. George (1925, 1928) noted this aphid attacking the roots of *Eleusine coracana* and *Echinochloa colona* (= *Panicum colonum*) in Coimbatore from September to November. In the present case the aphids were captured as alates on *Eleusine coracana* in Coimbatore from May to June when there was cool and humid weather with rain. It is apparently a casual visitor to this locality as no regular colonies are found on these plants. In north India it appears to

be more common as Das (1918) recorded it from various plants in central India, and Banerjee and Basu (1955) from the eastern region.

6. **Rhopalosiphum padi** (Linnaeus)

Aphis padi Linnaeus, 1758, Sys. Nat. X.

This is another aphid affecting cereal crops which closely resembles the last. Eastop (1955) and Doncaster (1956) have shown that the species can be distinguished by the smaller number of hairs on the 8th abdominal tergite as well as the shorter hairs on the antennae and body.

The aphid was noted in the western Himalayas (coll. R. N. Azad) at Simla feeding on wheat in November. Banerjee and Basu (1955) also recorded it from the eastern region in north India. So far it has not been found in south India.

7. Males in **Rhopalosiphum nymphaeae** (Linnaeus)

This is an aphid well known all over the world for its habit of feeding on *Prunus* sp. as a primary host, and migrating to aquatic plants in summer. In south India it has so far been noted only on its secondary hosts on the hills as well as the plains. Sexual forms had yet not been secured in any locality in India. Alate males have now been obtained in Coimbatore from a colony feeding on *Eichhornia crassipes* in January. The production of males on its secondary host in a comparatively warm region where the primary hosts are not available has necessarily to be abortive. The temperature and photoperiod of the season should have been conducive to the production of the sexual forms. However, colonies on the secondary hosts in Nilgiri Hills during the same period have not yet been found to produce any sexual forms. Extensive colonies were found on *Aponogeton monocharia* living only by parthenogenesis.

8. Males in **Schoutedenia emblica** (Patel & Kulkarni)

Apterous males and oviparous females had been reported (David & Hille Ris Lambers 1956) in *Schoutedenia emblica* subsp. *andhraka* David & HRL. from the east coast of south India, in the monsoon season. *Schoutedenia emblica* (Patel & Kulkarni) occurring on the west coast in March contained apterous males similar to the ones reported before. Since the temperature and photoperiod of summer is different from that of the monsoon season, the production of sexual forms under these conditions in the plains of India should be of considerable interest.

9. Oviparous females in **Brevicoryne brassicae** (Linnaeus)

The mealy cabbage aphid is known all over the world to be an injurious pest of cruciferous vegetables in temperate regions, and has been found to occur to a limited extent in north India. It had so far been known only from its parthenogenetic forms in this country. Specimens collected from Simla in March on cabbage (coll. R. N. Azad) contained oviparous females. Simla experiences severe winter with snow as in the temperate regions. In March, however, the conditions are similar to those of the northern spring. It is rather unusual to find oviparae in this season.

This aphid has not so far been found in south India, either on the plains or on the hills.

UNRECORDED FOOD PLANTS OF SOME SOUTH INDIAN APHIDS

Aphis craccivora Koch. *Carica papaya* (Papaya). Small colonies were noted on the leaves in March which made the leaves curl.

Aphis gossypii Glover. *Achras sapota* (Sapota), *Bidens pilosa*, *Coniza* sp., *Emilia sonchifolia*, and *Lawsonia alba* from January to March; *Polyalthia longifolia* (coll. V.P.Rao) in Bangalore; *Ocimum sanctum* in July; *Pimpinella monoica*, *Solanum nigrum*, *S. seaforthianum*, and *S. wenlandi* in February.

Aphis malvoides van der Goot. *Emilia sonchifolia*.

Macrosiphum hellebori Theobald & Walton. *Agrostemma coelirosa*. The record of *M. euphorbiae* (Thomas) on *Echeveria* sp. (David 1956) refers to this species.

Schizaphis graminum (Rondani). *Sorghum vulgare* seedlings in July.

Tetraneura hirsuta (Baker). *Setaria italica* in Coimbatore and *Eleusine coracana* in Pattambi in central Kerala in October. Due to the compact nature of the laterite soil of the region, the aphids were found crowding on the surface of the soil at the base of the stem, attended by red ants.

Toxoptera aurantii Boyer de Fonscolombe. *Caesalpinia coriaria* in February in Coimbatore, and *Mangifera indica* and *Saccharum officinarum* in Bangalore (coll. V. P. Rao).

Toxoptera odinae (van der Goot). *Achras sapota*, in February.

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